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EXAMINER

PERVAN, MICHAEL

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/728,232	Applicant(s) TAKEUCHI ET AL.	
	Examiner Michael Pervan	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/3/03, 4/23/04, 7/7/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 6-7, 14-16, 18-20, 22 and 24-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4, 11 and 13 of copending Application No. 10/728,265. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claims 1, 6-7, 14-16, 18-20 and 24-26 are the broader version of claims 4, 11 and 13 of Application No. 10/728,265.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 6-7 of this Application	Claim 4 of Application No. 10/728,265
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<p>1. An optical element for gathering light emitted from a planar luminous element having isotropic light emitting characteristics, comprising: an incidence plane formed on one side of the optical element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element; and a plurality of protrusions formed on the other side of the optical element, each protrusion having a shape of a frustum.</p> <p>6. The optical element according to claim 1, wherein the frustum is a conical frustum.</p> <p>7. The optical element according to claim 1, wherein the frustum is a multiangularly pyramidal frustum.</p>	<p>4. An optical element arranged between a planar lighting element and a liquid crystal panel for collecting light that exits from the planar lighting element, the optical element comprising: an incidence plane to which the light that exits from the planar lighting element enters; and a plurality of protrusions provided on a surface facing the incidence plane, wherein substantially all the protrusions are each arranged in a one-to-one correspondence with an opening of a respective pixel of the liquid crystal panel, wherein the planar lighting element is an organic electroluminescent element, the protrusion having one of a conical frustum shape and a multiangularly pyramidal frustum shape.</p>
<p>Claims 14-16, 18-20 and 22 of this Application</p>	<p>Claim 11 of Application No. 10/728,265</p>
<p>14/18. A planar luminous unit comprising: a planar luminous element having an exit plane from which light isotropically exits;</p>	<p>11. A planar lighting unit comprising: an organic electroluminescent element; and an optical element arranged on a side from</p>

<p>an optical element placed on the exit plane for gathering the light, the optical element including; an incidence plane formed on one side of the optional element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element; and a plurality of protrusions formed on the other side of the optical element, each protrusion having a shape of a frustum.</p> <p>15/19. The planar luminous unit according to claim 18, wherein the frustum is a conical frustum.</p> <p>16/20. The planar luminous unit according to claim 18, wherein the frustum is a multiangularly pyramidal frustum.</p> <p>22. The planar luminous unit according to claim 18, wherein the planar luminous element is an organic electroluminescent element.</p>	<p>which the organic electroluminescent element exits light, the optical element being arranged between the organic electroluminescent element and a liquid crystal panel for collecting the light that exits from the organic electroluminescent element, the optical element including: an incidence plane to which the light that exits from the organic electroluminescent element enters; and a plurality of protrusions provided on a surface facing the incidence plane, wherein substantially all the protrusions are each arranged in a one-to-one correspondence with an opening of a pixel of the liquid crystal panel, the protrusion having one of a conical frustum shape and a multiangularly pyramidal frustum.</p>
Claims 24-26 of this Application	Claim 13 of Application No. 10/728,265
24. A liquid crystal display unit	13. A liquid crystal display unit

<p>comprising: a backlight including; a planar luminous element having an exit plane from which light isotropically exits; an optical element placed on the exit plane for gathering the light, the optical element including; an incidence plane formed on one side of the optional element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element; a plurality of protrusions formed on the other side of the optical element, each protrusion having a shape of a frustum; and a liquid crystal panel, through which the light reaches a user's eyes, placed near the protrusions.</p> <p>25. The liquid crystal display unit according to claim 24, wherein the frustum is a conical frustum.</p> <p>26. The liquid crystal display unit according to claim 24, wherein the frustum is a multiangularly pyramidal frustum.</p>	<p>comprising: a liquid crystal panel; and a planar lighting unit arranged away from an observer of the liquid crystal panel relative to the liquid crystal panel, the planar lighting unit including: an organic electroluminescent element; and an optical element arranged on a side from which the organic electroluminescent element exits light, the optical element being arranged between the organic electroluminescent element and the liquid crystal panel for collecting the light that exits from the organic electroluminescent element; the optical element including: an incidence plane to which the light that exits from the organic electroluminescent element enters; and a plurality of protrusions provided on a surface facing the incidence plane, wherein substantially all the protrusions are each arranged in a one-to-one correspondence with an opening of a pixel of the liquid crystal panel, the</p>
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	protrusion having one of a conical frustum shape and a multiangularly pyramidal frustum.
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As can be seen above, the difference between claims 1, 6-7, 14-16, 18-20, 22 and 24-26 of this application and claims 4, 11 and 13 of Application No. 10/728,265 is that the present claim does not recite the limitations of wherein substantially all the protrusions are each arranged in a one-to-one correspondence with an opening of a pixel of the liquid crystal panel, this change broadens claims 1, 6-7, 14-16, 18-20, 22 and 24-26 over application claims 4, 11 and 13 of Application No. 10/728,265 and since the present claims 1, 6-7, 14-16, 18-20, 22 and 24-26 are in comprising format, which includes any unclaimed features therefore, the present claims 1, 6-7, 14-16, 18-20, 22 and 24-26 are not patentably distinct from claims 4, 11 and 13 of Application No. 10/728, 265.

3. Applicant is advised that should claims 18-21 be found allowable, claims 14-17 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 8-10, 17, 21 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In regards to claims 8-10, 17, 21 and 27, "pyramidal frustum is a regular pyramidal frustum" is not supported by the specification. Even though page 26, lines 1-8 refers to "a regular hexangulantly pyramidal frustum", it is unclear from the applicant's disclosure as to how "a multiangulantly pyramidal frustum" can be "a regular pyramidal frustum" as claimed. However, for the purposes of this rejection claims 8, 17, 21 and 27 will be assumed to be dependent from their respective independent claims, namely 1, 14, 18 and 24.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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7. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Yu et al (US 6,979,112).

In regards to claim 1, Yu discloses an optical element (light guide plate 20) for gathering light emitted from a planar luminous element having isotropic light emitting characteristics (light sources 30), comprising:

an incidence plane formed on one side of the optical element for permitting the light to enter the optical element (light input end 21), the incidence plane facing the planar luminous element (Fig. 1); and

a plurality of protrusions formed on the other side of the optical element, each protrusion having a shape of a frustum (Fig. 1 and col. 4, lines 1-7; as can be seen from the drawing the plurality of protrusions are formed on the other side of the optical element).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1 and 6-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al (JP 2000-148032 A) in view of Lee (US 6,164,790).

In regards to claim 1, Onishi discloses an optical element (light control strip 6) for gathering light emitted from a planar luminous element (EL 1) having isotropic light emitting characteristics, comprising:

an incidence plane formed on one side of the optical element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element (Drawing 1a; as can be seen from the drawing, an incidence plane is formed on one side of the optical element and faces the planar luminous element (EL)); and

a plurality of protrusions formed on the optical element, each protrusion having a shape of a frustum (Drawings 1a and 3a).

Onishi does not disclose a plurality of protrusions formed on the other side of the optical element.

Lee discloses a plurality of protrusions formed on the other side of the optical element (col. 5, lines 27-30).

It would have been obvious at the time of invention to modify Onishi with the teachings of Lee, protrusions on the other side of the optical element, by applying the teachings of Lee to the device of Onishi because the brightness is more uniformly distributed and has a wider angle of view (col. 5, lines 35-37).

In regards to claim 6, Onishi does not disclose the optical element according to claim 1, wherein the frustum is a conical frustum.

However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a conical frustum described in the specification, therefore it would have been obvious to one of

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ordinary skill in the art to choose a pyramidal frustum or a conical frustum based on a designer's choice.

In regards to claim 7, Onishi does not disclose the optical element according to claim 1, wherein the frustum is a multiangularly pyramidal frustum.

However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a multiangularly pyramidal frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a pyramidal frustum or a multiangularly pyramidal frustum based on a designer's choice.

In regards to claim 8, Onishi discloses the optical element according to claim 1, wherein the pyramidal frustum is a regular pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

In regards to claim 9, Onishi does not disclose the optical element according to claim 8, wherein the regular pyramidal frustum has a basal plane, the number of sides of the basal plane being equal to or more than six.

However, Onishi discloses the regular pyramidal frustum has a basal plane, the number of sides of the basal plane being equal to four (Drawing 3a; as can be seen from the drawing, the basal plane of the regular pyramidal frustum has four sides).

Since, there is no advantage or benefit to having a six or more sided basal plane of a pyramidal frustum described in the specification, therefore it would have been

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obvious to one of ordinary skill in the art to choose a four sided basal plane of a pyramidal frustum or a six or more sided basal plane of a pyramidal frustum based on a designer's choice.

In regards to claim 10, Onishi discloses the optical element according to claim 8, wherein the regular pyramidal frustum has a basal plane, the number of sides of the basal plane being equal to four (Drawing 3a; as can be seen from the drawing, the basal plane of the regular pyramidal frustum has four sides).

In regards to claim 11, Onishi discloses the optical element according to claim 7, wherein the other side of the optical element is completely covered with the protrusions (Drawings 1a, 1b and 3a).

In regards to claim 12, Onishi discloses the optical element according to claim 11, wherein the number of kinds of the shape of the frustum is singular (Drawings 1a and 3a).

In regards to claim 13, Onishi does not disclose the optical element according to claim 11, wherein the number of kinds of the shape of the frustum is plural.

However, Onishi discloses the number of kinds of the shape of the frustum is singular (Drawings 1a and 3a).

Since, there is no advantage or benefit to having plural kinds of shapes of the frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a singular kind of shape of the frustum or a plural kind of shape of the frustum based on a designer's choice.

In regards to claims 14 and 18, a planar lighting unit comprising:

a planar luminous element (EL light source 1) having an exit plane from which light isotropically exits (Drawing 1a and paragraph 7);

an optical element (light control strip 6) placed on the exit plane for gathering the light, the optical element including (Drawing 1a);

an incidence plane formed on one side of the optical element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element (Drawing 1a; as can be seen from the drawing, an incidence plane is formed on one side of the optical element and faces the planar luminous element (EL)); and

a plurality of protrusions formed on the optical element, each protrusion having a shape of a frustum (Drawings 1a and 3a).

Onishi does not disclose a plurality of protrusions formed on the other side of the optical element.

Lee discloses a plurality of protrusions formed on the other side of the optical element (col. 5, lines 27-30).

It would have been obvious at the time of invention to modify Onishi with the teachings of Lee, protrusions on the other side of the optical element, by applying the teachings of Lee to the device of Onishi because the brightness is more uniformly distributed and has a wider angle of view (col. 5, lines 35-37).

In regards to claims 15 and 19, Onishi does not disclose the planar lighting unit according to claim 14, wherein the frustum is a conical frustum.

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However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a conical frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a pyramidal frustum or a conical frustum based on a designer's choice.

In regards to claims 16 and 20, Onishi does not disclose the planar lighting unit according to claim 14, wherein the frustum is a multiangularly pyramidal frustum.

However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a multiangularly pyramidal frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a pyramidal frustum or a multiangularly pyramidal frustum based on a designer's choice.

In regards to claims 17 and 21, Onishi discloses the planar lighting unit according to claim 14, wherein the pyramidal frustum is a regular pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

In regards to claim 22, Onishi discloses the planar luminous unit according to claim 18, wherein the planar luminous element is an organic electroluminescent element (paragraph 7).

In regards to claim 23, Onishi discloses the planer luminous unit according to claim 22, wherein the organic electroluminescent element is a bottom emission type (paragraph 7).

10. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al in view of Lee in further view of Hou et al (US 5,839,823).

In regards to claim 2, Onishi discloses the optical element according to claim 1, wherein each protrusion has a top plane and a basal plane (Drawings 1a and 3a).

Onishi and Lee do not disclose an area ratio of the top plane to the basal plane being ranged from 1% to 46% inclusive of 1% and 46%.

Hou discloses an area ratio of the top plane to the basal plane being ranged from 1% to 46% inclusive of 1% and 46% (Figs. 6-12 and col. 3, lines 35-48).

It would have been obvious at the time of invention to modify Onishi and Lee with the teachings of Hou, protrusions (microprisms) have dimensions which affect the light output distribution, by incorporating the teachings of Hou into the device of Onishi and Lee because it would optimize the light distribution of the optical element (light-directing assembly) which may include the area ratio range of 1% to 46%.

In regards to claim 3, Onishi and Lee do not disclose the optical element according to claim 2, wherein the area ratio is ranged from 20% to 30% inclusive of 20% and 30%.

Hou discloses the optical element according to claim 2, wherein the area ratio of the top plane to the basal plane being ranged from 20% to 30% inclusive of 20% and 30% (Figs. 6-12 and col. 3, lines 35-48).

It would have been obvious at the time of invention to modify Onishi and Lee with the teachings of Hou, protrusions (microprisms) have dimensions which affect the light output distribution, by incorporating the teachings of Hou into the device of Onishi and Lee because it would optimize the light distribution of the optical element (light-directing assembly) which may include the area ratio range of 20% to 30%.

In regards to claim 4, Onishi discloses the optical element according to claim 1, wherein each protrusion has a top plane, a basal plane and an oblique line, the top plane having a circumference, the basal plane having a circumference and a center, the oblique line being the shortest line that links the circumference of the top plane and the circumference of the basal plane (Drawings 1a and 3a).

Onishi and Lee do not disclose an angle between the oblique line and a straight line that passes through the center and that is perpendicular to the incidence plane being ranged from 7.5° to 27° inclusive of 7.5° and 27° .

Hou discloses an angle between the oblique line and a straight line that passes through the center and that is perpendicular to the incidence plane being ranged from 7.5° to 27° inclusive of 7.5° and 27° (Figs. 6-12 and col. 3, lines 35-48).

It would have been obvious at the time of invention to modify Onishi and Lee with the teachings of Hou, protrusions (microprisms) have dimensions which affect the light output distribution, by incorporating the teachings of Hou into the device of Onishi and

Lee because it would optimize the light distribution of the optical element (light-directing assembly) which may include an angle range of 7.5° to 27° .

In regards to claim 5, Onishi and Lee do not disclose the optical element according to claim 4, wherein the angle is ranged from 10° to 15° inclusive of 10° and 15° .

Hou discloses an angle between the oblique line and a straight line that passes through the center and that is perpendicular to the incidence plane being ranged from 10° to 15° inclusive of 10° and 15° (Figs. 6-12 and col. 3, lines 35-48).

It would have been obvious at the time of invention to modify Onishi and Lee with the teachings of Hou, protrusions (microprisms) have dimensions which affect the light output distribution, by incorporating the teachings of Hou into the device of Onishi and Lee because it would optimize the light distribution of the optical element (light-directing assembly) which may include an angle range of 10° to 15° .

11. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al in view of Lee in further view of Tomiyori (US 6,119,023).

In regards to claim 24, Onishi discloses a liquid crystal display unit comprising:
a backlight including;
a planar luminous element (EL light source 1) having an exit plane from which light isotropically exits (Drawing 1a and paragraph 7);
an optical element (light control strip 6) placed on the exit plane for gathering the light, the optical element including (Drawing 1a);

an incidence plane formed on one side of the optical element for permitting the light to enter the optical element, the incidence plane facing the planar luminous element (Drawing 1a; as can be seen from the drawing, an incidence plane is formed on one side of the optical element and faces the planar luminous element (EL)); and

a plurality of protrusions formed on the optical element, each protrusion having a shape of a frustum (Drawings 1a and 3a).

Onishi does not disclose a plurality of protrusions formed on the other side of the optical element and a liquid crystal panel, through which the light reaches a user's eyes, placed near the protrusions.

Lee discloses a plurality of protrusions formed on the other side of the optical element (col. 5, lines 27-30).

It would have been obvious at the time of invention to modify Onishi with the teachings of Lee, protrusions on the other side of the optical element, by applying the teachings of Lee to the device of Onishi because the brightness is more uniformly distributed and has a wider angle of view (col. 5, lines 35-37).

Onishi and Lee do not disclose a liquid crystal panel, through which the light reaches a user's eyes, placed near the protrusions.

Tomiyori discloses a liquid crystal panel, through which the light reaches a user's eyes, placed near the protrusions (col. 1, lines 44-47).

It would have been obvious at the time of invention to modify Onishi and Lee with the teachings of Tomiyori, liquid crystal panel with an EL backlight, by replacing the

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backlight of Tomiyori with the device of Onishi and Lee because it would provide better light distribution.

In regards to claim 25, Onishi does not disclose the liquid crystal display unit according to claim 24, wherein the frustum is a conical frustum.

However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a conical frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a pyramidal frustum or a conical frustum based on a designer's choice.

In regards to claim 26, Onishi does not disclose the liquid crystal display unit according to claim 24, wherein the frustum is a multiangularly pyramidal frustum.

However, Onishi does disclose the frustum is a pyramidal frustum (Drawings 1a and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Since, there is no advantage or benefit to having the frustum being a multiangularly pyramidal frustum described in the specification, therefore it would have been obvious to one of ordinary skill in the art to choose a pyramidal frustum or a multiangularly pyramidal frustum based on a designer's choice.

In regards to claim 27, Onishi discloses the liquid crystal display unit according to claim 24, wherein the pyramidal frustum is a regular pyramidal frustum (Drawings 1a

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and 3a; as can be seen from the drawings, the protrusions are regular pyramidal frustums).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art (Yoshizawa US 6,542,207) is deemed relevant since it discusses an EL backlight having conical or pyramid shaped frustum protrusions.

Prior art (Taniguchi et al US 6,727,963) is deemed relevant since it discusses a backlight having protrusions in the shape of a frustum.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP
Dec. 29, 2006

AMR A. AWAD
SUPERVISORY PATENT EXAMINER
